

Serial No. 10/671,938

Docket No. YOR920030165US1 (YOR.460)

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to Figures 1 and 8. These sheets, which includes Figures 1, 7, and 8, replace the original sheets including Figures 1, 7, and 8. Figure 1 has been amended to label communication network as “110” and Figure 8 has been amended to delete “802” and “805”.

Attachments: 2 Replacement Sheets
2 Annotated Sheets Showing Changes

REMARKS

Claims 1-20 are all the claims presently pending in the application. Claims 6 and 8 have been amended to correct problems of antecedent basis. Claims 16-20 have been added to claim additional features of the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-15 stand rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter.

Claim 9 stands rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Liu et al., "Continual Queries for Internet Scale Event-Driven Information Delivery". Claims 1-4, 6, 7, and 10 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Liu, further in view of US Patent 5,915,251 to Burrows et al.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

As described and defined in, for example, independent claim 1, the present invention is directed to a method for monitoring continual range queries against events. Each range query is decomposed into one or more predefined virtual constructs. A query index is built, and the query index is used to match an event with the range queries.

The present invention provides a single event monitor for an event space that is accessible to a plurality of queries, including queries that will cause overlapping ranges in the monitor event region. No method is known to providing a fast matching of events against a large number of queries in such event monitors.

The present invention provides this fast matching for a plurality of queries by breaking each range query down into predefined regions of the monitored event space, referred to in the

present invention as "virtual constructs", and providing an index mechanism to relate these virtual constructs to each query for which it had been constructed. This query index provides the fast matching that allows a single event monitor to service a plurality of queries in a plurality of dimensions.

Thus, the present invention is more than simply a mechanism involving continual queries. It is a mechanism that allows a single event space monitor to service many continual queries wherein a fast matching of an event can be reported to the appropriate queries.

As explained, beginning at line 19 on page 2 of the specification, until the present invention, it is been difficult to construct an effective index for multidimensional range predicates, particularly for overlapping ranges. As explained beginning at line 3 on page 3, the only mechanism known to the present inventors involves an R-tree method, and this method degrades when the spatial objects are highly overlapping.

In contrast, the present invention provides an indexing mechanism from the event monitor back to the various queries. This indexing feature is novel to the art of event monitors.

II. THE 35 USC §101 REJECTION

Claims 1-15 stand rejected under 35 U.S.C. §101, because, as best understood, the Examiner reconsiders that there is no tangible result.

In response, Applicants submit that the invention is described as being executed on a computer (e.g., a machine). By such execution on a machine, the result is inherently tangible, since any stage in the execution of the process by a computer is measurable by one having ordinary skill in the art, including the final result of determining which queries are associated with a detected event and providing indication of such query feedback.

Applicants make no pretense whatsoever that the invention can be executed in any type of manner that is intangible or that the present invention has any meaning whatsoever if the results are not tangible or that it makes any sense to consider the present invention as "intangible".

Therefore, if the USPTO persists in describing the present invention as being intangible, it has the burden to explain on record how a machine-implemented process could realistically be

considered "intangible", or, in the alternative, how the present invention could have any meaning at all if the results were to be described as intangible, since the process of this invention includes the determination that an event in an event space has occurred and to provide an indication of such event occurrence as response to appropriate input event queries.

Applicants submit that such an event monitor does indeed provide a "useful, concrete and tangible result", and is completely analogous to the financial calculator invention of *State Street*.

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. THE PRIOR ART REJECTIONS

The Examiner alleges that Liu teaches the claimed invention described by claim 9 and, when, modified by Burrows, renders obvious claims 1-4, 6, 7, and 10-15. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Liu.

Liu discloses the concept of continual queries as queries that monitor updates of interest and return results whenever an update reaches a specified threshold (see abstract). To achieve this result, Liu employs a scheme wherein an event monitor is created to provide event monitoring for an input query, as evidenced by the discussion in 4.3, wherein is described the definition of a continual query CQ_i as being a triple (Q, T_{cq}, Stop) . Thus, in Liu, the event monitor is specific for each query. It is questionable whether there is a need to correlate the result of the query's event monitor activity in Liu, since it would appear from this description that the event monitor is used only for a single query. Even if a plurality of queries is done in Liu, there is no suggestion of a correlation between event detection and queries in the manner of the present invention.

In contrast, as shown in Figure 4, the present invention involves an event monitor that scans an event space that is constructed to service a plurality of queries. Thus, in the present invention, it is necessary to be able to correlate a detected event with the query or queries to which it is related, and this feedback loop is achieved in the present invention by using an indexing mechanism (defined in the independent claims) that correlates the events in the

monitored event space with all queries for which the event point in the event space has been created. Liu does not have such index mechanism, which the Examiner seems to concede, and perhaps does not even need one, since the query and monitor relationship is arguably uniquely defined by the triple that defines the continual query so that no additional correlation is necessary, let alone one based on the index mechanism of the present invention.

Moreover, Applicants submit that the trigger conditions T_{cq} as a parameter in the triple that defines the continual query in Liu fails to satisfy the plain meaning of the claim language, since there is no decomposition step in Liu, as required by the independent claims. This parameter merely defines the range to be monitored by the continual query and there is no need to break this region down further from that defined monitored region. The fact that the range to be monitored involves more than one parameter or consists of more than one range is a concept different from the decomposition step of the present invention. Thus, there does not appear to be anything in Liu that reasonably satisfies this step in the independent claims that requires a decomposition.

Finally, it is submitted that the principle of operation of Liu, wherein no indexing is described as used to correlate event points in a monitored event space and the continual query and where no decomposition of the query occurs, would have to be changed in order to satisfy the claimed invention. Therefore, such modification cannot be done to Liu, and Liu is thereby disqualified as a primary reference.

The Examiner introduces Burrows for the feature of indexing, conceded as being missing. However, as just explained above, indexing would clearly change the principle of operation of the continual queries of Liu, if it is not currently employed therein, so that modification by Burrows would be improper. Moreover, Burrows is clearly not related to the problem of continual queries and is, therefore, non-analogous art to either Liu or the present invention and not properly combinable.

Finally, even if the indexing of Burrows were to be somehow incorporated into the continual query method of Liu, the result would not satisfy the plain meaning of the claim language of even the independent claims.

That is, the indexing scheme of Burrows is the reverse of what is required to satisfy the plain meaning of the claimed invention, since it relates to an index between an input and contents

of a database. In order to satisfy the plain meaning of the claim language, the indexing scheme would have to be between an entry of the database and a plurality of queries. No such index scheme is provided in Burrows. Therefore, even if the indexing scheme of Burrows were to be incorporated into Liu, this combination of references would not result in the present invention and Applicants submit that there are elements of the claimed invention that are not taught or suggest by Liu.

Hence, turning to the clear language of the claims, in Liu there is no teaching or suggestion of: "... decomposing each range query into one or more predefined virtual constructs; building a query index; and using said query index to match an event with said range queries", as required by independent claim 1. The remaining independent claims contain similar language.

Relative to the rejection for claim 9, wherein the Examiner alleges that there is no patentable weight for limitations stated in the alternative, Applicants submit that this position is incorrect as a matter of law, since claim limitations are often expressed in the alternative with no effect on patentable weight. Relative to allegation of the patentable weight, applicants further submit that the limitations are written such as to provide proper antecedent basis for the service as being compliant with the method of the present invention. Therefore, these claim limitations do indeed have patentable weight as directed to the method of the present invention.

Moreover, as explained above, Liu does not use the method of the present invention, wherein indexing is used to correlate an event with an input query. Therefore, Liu does not anticipate a service based upon the method of the present invention.

IV. FORMAL MATTERS AND CONCLUSION

Minor errors have been corrected in the disclosure.

The examiner has requested revisions to figures 1, 6, 7, and 8. Applicants believe that the enclosed drawing revisions properly address the Examiner's concerns, in combination with the above changes to the specification.

In view of the foregoing, Applicant submits that claims 1-20, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at

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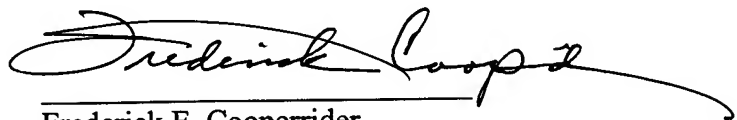
the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

Date: 9/6/06


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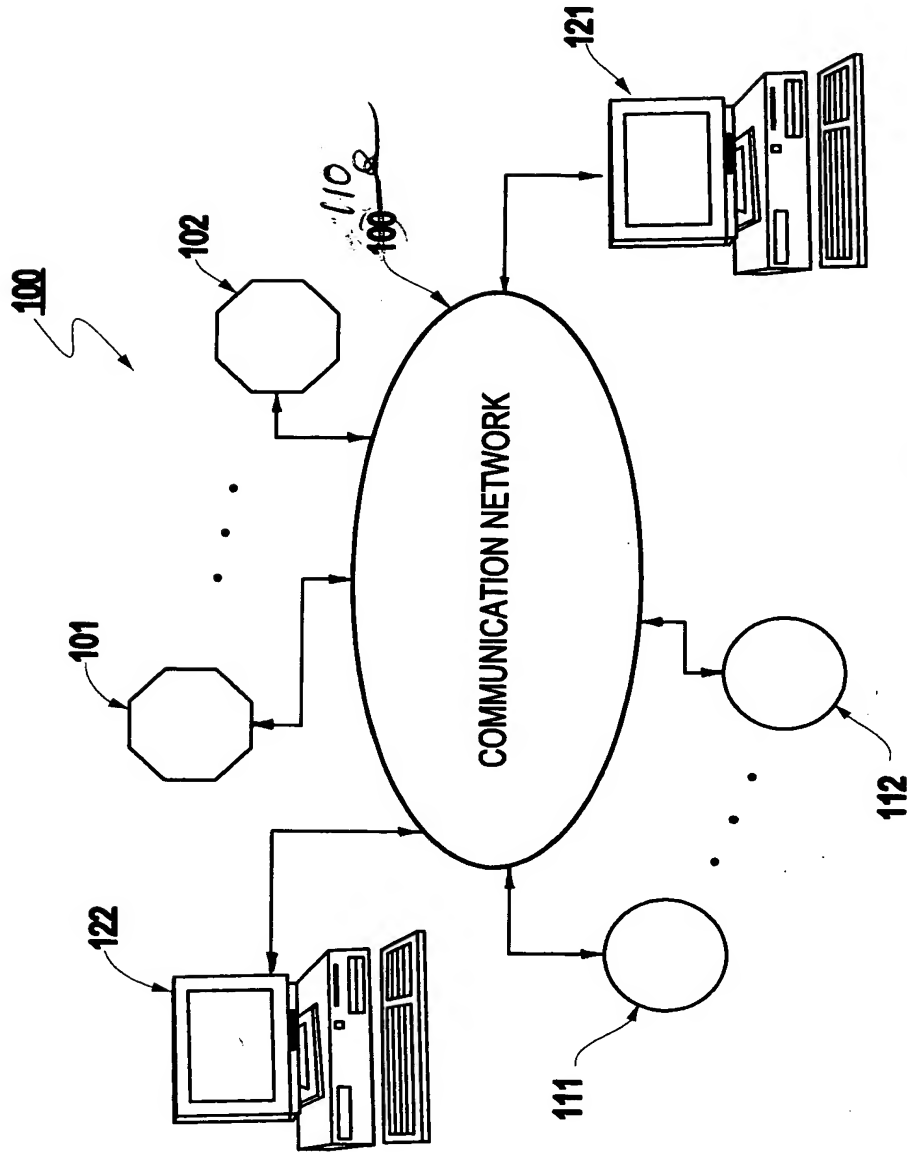


FIG.1

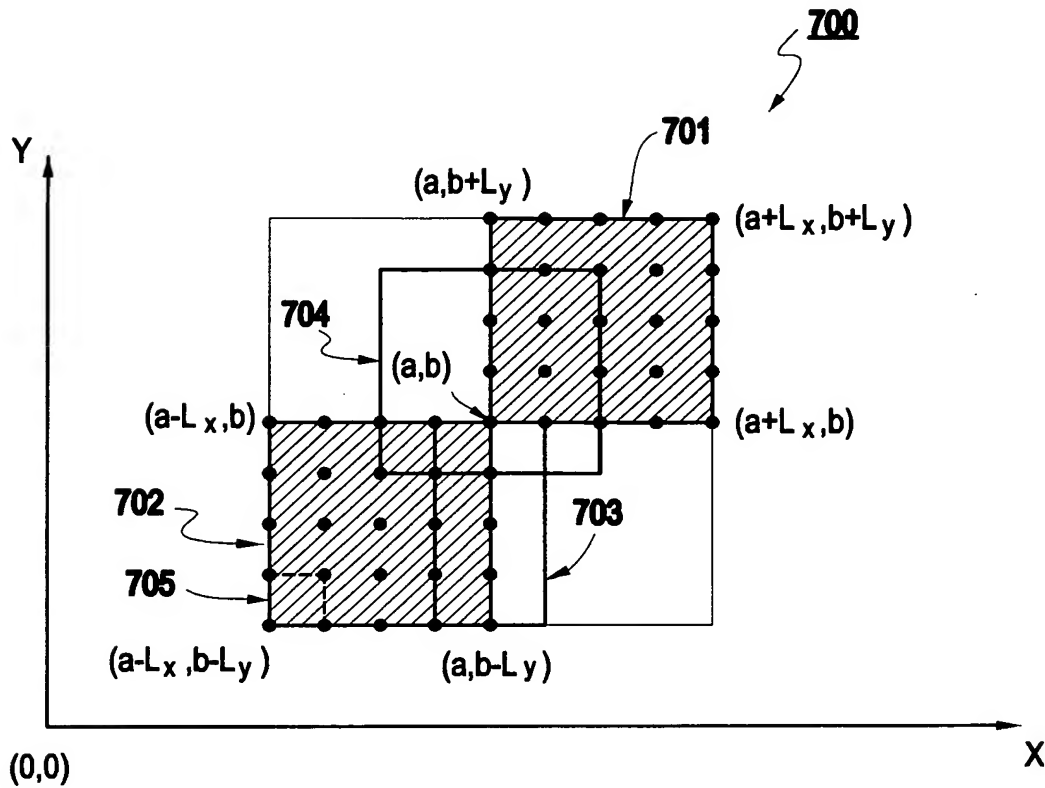


FIG. 7

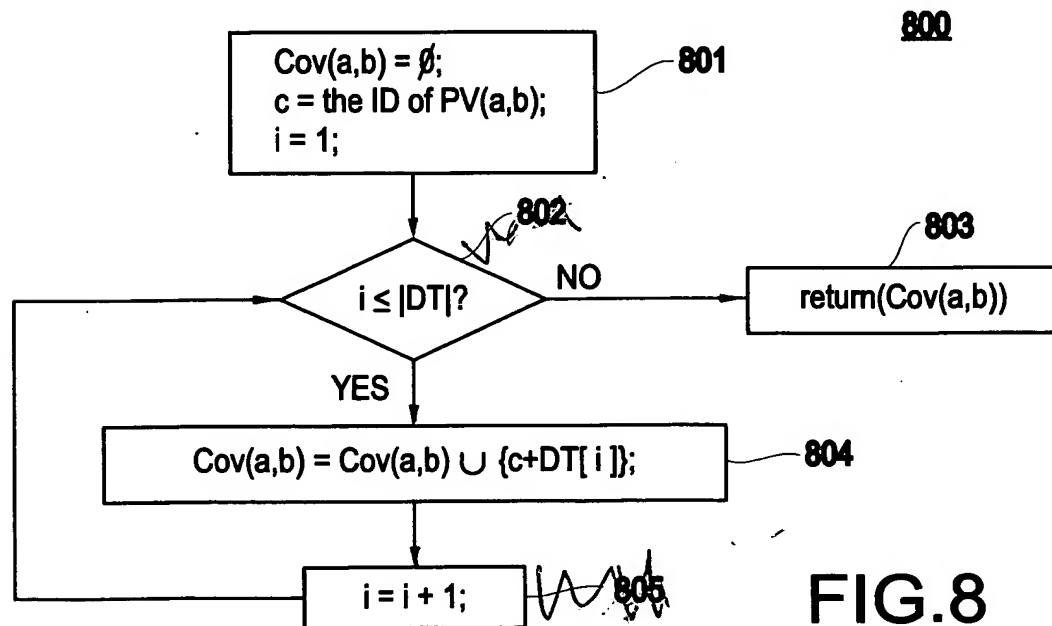


FIG. 8